

Mites and Insects Affecting Tree Establishment



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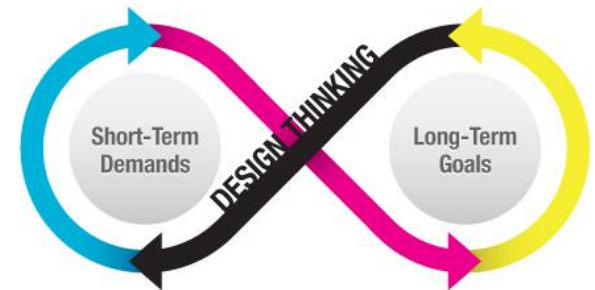


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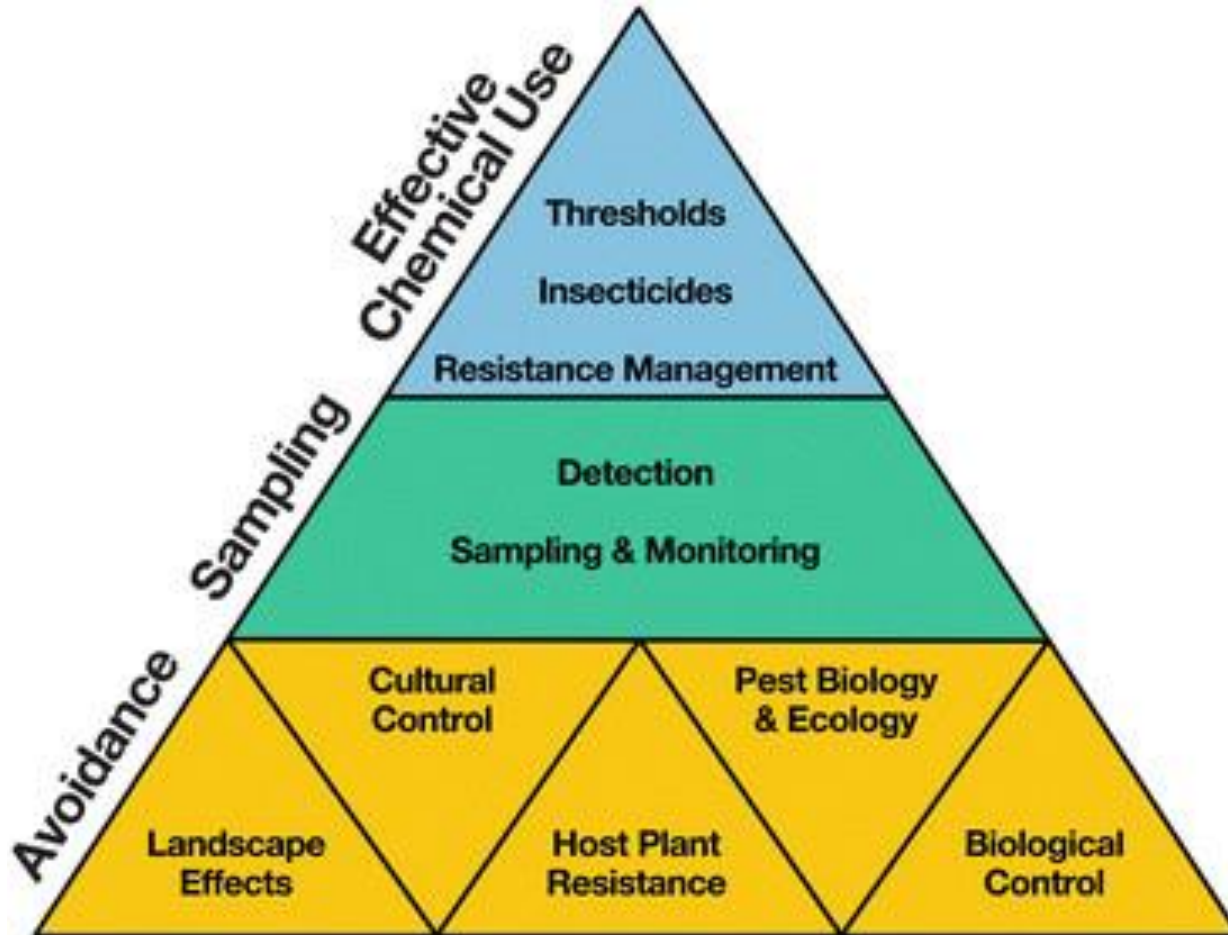
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Arthropod Pests on Pistachio

- Arthropod pest management during orchard establishment
 - Considering the immediate, or within-season needs to prevent economic damage.



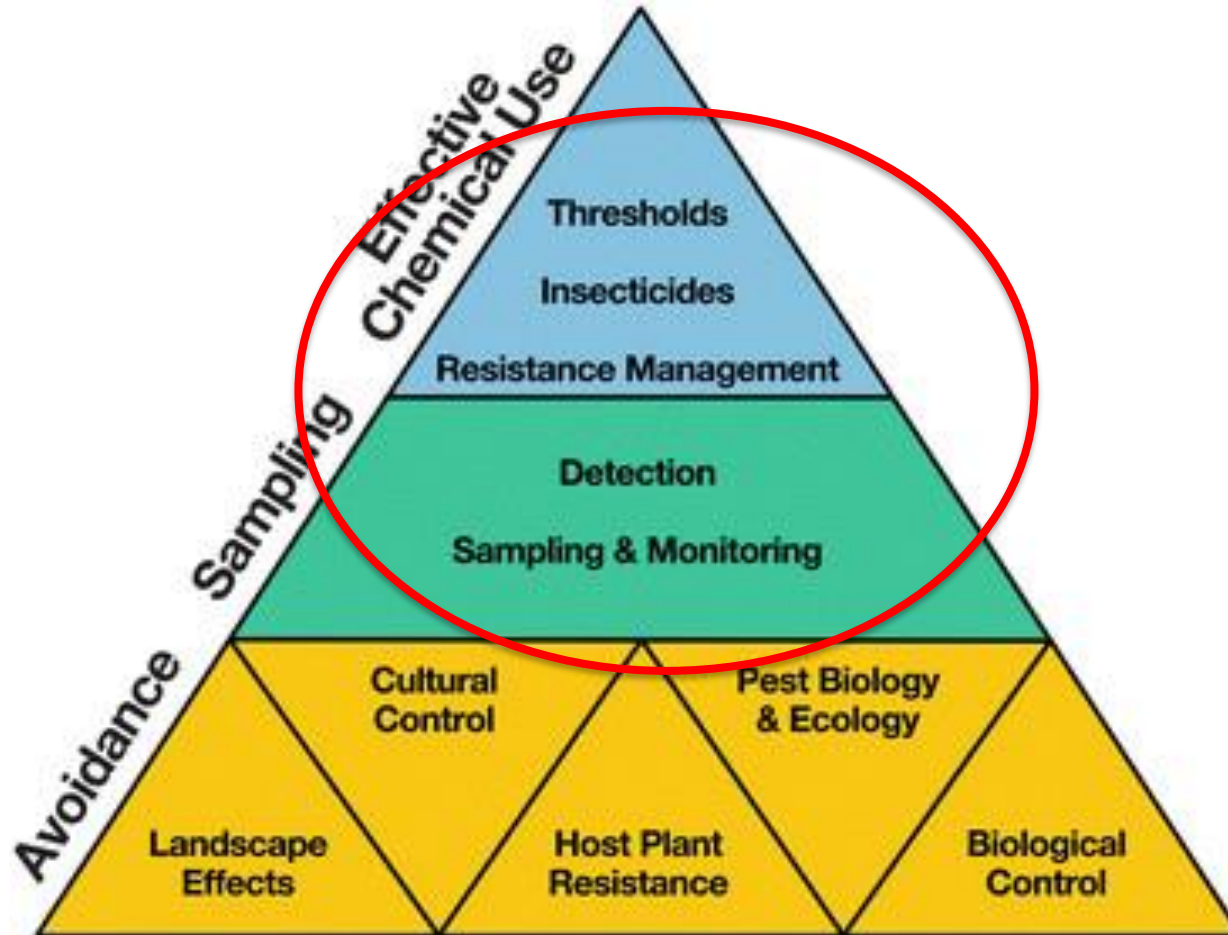
Principles of IPM



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Using Pesticides

- Disclaimer: Labels often change and reflect the law how pesticide can be legally applied. The following information in this presentation is for the purpose of general education only and does not constitute an endorsement or recommendation for use.



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Arthropod Pests on Pistachio

- Species that can affect establishment of trees
 - Hemipterans, soft scale and aphids
 1. Brown soft, *Coccus hesperidum*.
 2. Black scale, *Saissetia oleae*.
 3. Frosted scale, *Parthenolecanium pruinosum*.
 4. European fruit, lecanium, *P. corni*.
 5. Cotton aphid, *Aphis gossypii*



Arthropod Pests on Pistachio

Black scale

- Damage
 - Produce large amount of honeydew in spring
 - Provides substrate for black sooty mold.
 - Can result in reduction of photosynthesis.
 - Large populations can reduce shoot growth.



Arthropod Pests on Pistachio

Black scale

- Management
 - Biological: usually keep populations under economic levels.
 - Chemical: narrow range oil, insect growth regulators are effective.

Metaphycus luteolus



Rhyzobius sp.



Arthropod Pests on Pistachio

False chinch bug

- Damage
 - Feeding on young trees can cause trees to wilt and die.
 - Feeding on older trees can result in severe leaf-drop.



Arthropod Pests on Pistachio

False chinch bug

- Management
 - Cultural: mow ground cover before bloom in spring.
 - Chemical: primarily broad-spectrum insecticides
 - Apply morning or early evening.
 - More effective if trunk guards removed.



Arthropod Pests on Pistachio

Darkling beetles

- Damage
 - Feeds on 3 to 4 week-old Kerman bud of newly-grafted trees.
 - Also can feed on Kerman shoots following first dormant period.
 - Don't confuse with predaceous beetle.

Adult darkling beetle



Adult predaceous ground beetle



Arthropod Pests on Pistachio

Darkling beetles

- Management
 - Cultural: avoid discing weeds in or out side of orchard at time of budding.
 - Chemical: after assessing population/damage, can treat with broad-spectrum insecticide – carbamate.

Adult feeding damage



Arthropod Pests on Pistachio

Ants: southern fire ant, *Solenopsis xyloni*.

- Direct damage
 - Directly feeds on emerging buds 3 – 4 weeks post grafting.
 - Girdle base of bud.
- Indirect damage
 - Tend honeydew-producing hemipterans. Disruption natural enemies.



Arthropod Pests on Pistachio

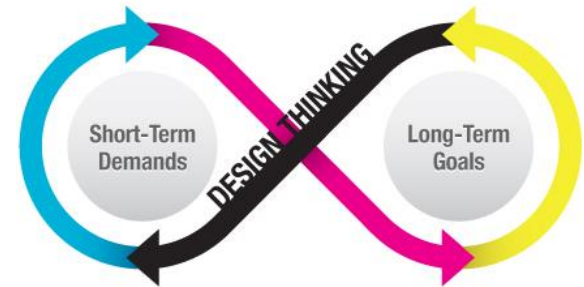
Ants: southern fire ant, *Solenopsis xyloni*.

- Management
 - Granular baits very effective
 - Insect growth regulators
 - Pyriproxyfen Esteem
 - Methoprene Extinguish
 - Stomach poisons
 - Metaflumizone Altrevin
 - Abamectin Clinch



Arthropod Pests on Pistachio

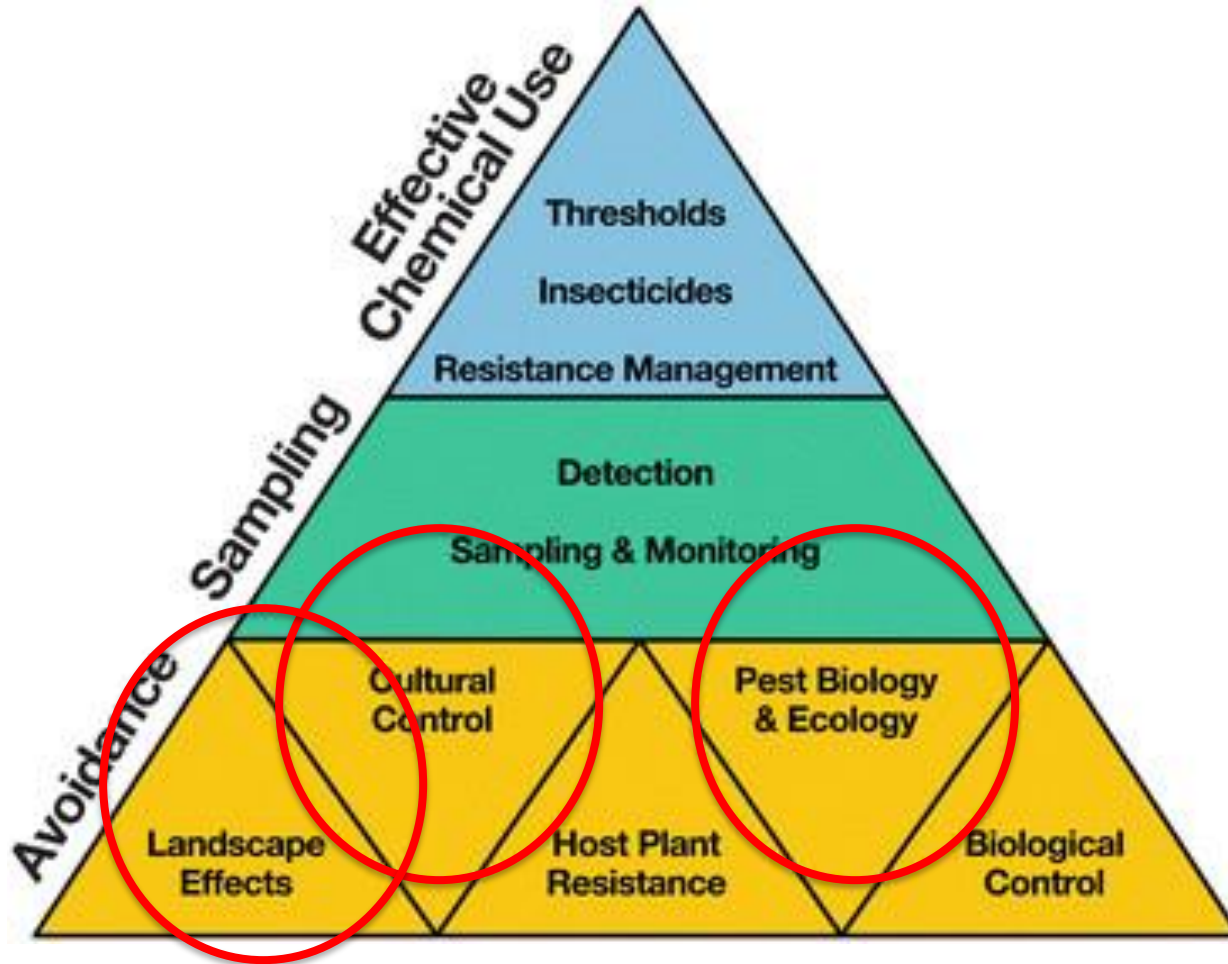
- Planning long-term arthropod pest management strategy at pre-planting and orchard establishment.



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Arthropod Pests on Pistachio

- Species that can affect establishment
 - Web-spinning mites
 - Twospotted spider mite, *Tetranychus urticae*.
 - Pacific mite, *Tetranychus pacificus*.
 - Hemipteran
 - Leaf-footed bug, *Leptoglossus zonatus*.



Arthropod Pests on Pistachio

Web-spinning mites

- Damage
 - Feeding damage appears as small areas of dead plant material, or stippling. 3 to 4 mites per leaf sufficient to cause defoliation.



Arthropod Pests on Pistachio

Web-spinning mites

- Management
 - Cultural: minimize dust, well-watered trees, avoid pyrethroids.
 - Biological: sixspotted thrips, and spider mite destroyer...
 - Chemical: several available products.



Arthropod Pests on Pistachio

Leaffooted bug

- Damage (direct)
 - Early-season feeding results in nut drop
 - Later-season feeding results in kernel necrosis.
- Damage (indirect)
 - Associated with Botryosphaeria, panicle and shoot blight.



Arthropod Pests on Pistachio

Leaffooted bug

- Management
 - Cultural: avoid interplanting with pomegranate and/or planting pomegranate hedgerows.
 - Pesticides: pyrethroids only class with residual activity.



Any Questions?



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